WHAT IS CLAIMED IS:

1. An injector pump for delivering fluid to a fluid receiving location of a fluid receiving device, comprising:

an initially dry fluidic path having a fluid application end for accepting fluid and an effluent end for delivering fluid to the receiving location, the fluidic path automatically filling with fluid up to the effluent end upon fluid application to the application end;

an isolator for fluidically isolating the effluent end from the receiving location to prevent passive fluid flow from the effluent end when the fluidic path includes a fluid;

driving means for electro-osmotically pumping fluid out of the effluent end of the fluidic path element and across the isolator to the fluid receiving location; and

a sealing element for sealing the fluidic path along a perimeter thereof to prevent fluid flow from the fluidic path at the perimeter during electro-osmotic pumping.

2. The injector pump of claim 1, wherein the initially dry fluidic path is made of a micro-porous material and wets up by capillary action when fluid is applied to the application end.

3. The injector pump of claim 2, wherein the isolator is an air gap adjacent the effluent end.

4. The injector pump of claim 3, wherein the fluidic path is made of a material havinga surface charge and zeta potential.

5. The injector pump of claim 4, wherein the driving means is a pair of spaced apart first and second electrodes for applying an electrical potential to a fluid in the fluidic path.

6. The injector pump of claim 5, wherein the first electrode is in electric contact with the fluid in the fluidic path at a first location and the second electrode is positioned at a second, spaced apart location for electrical contact with the fluid at the application end.

7. The injector pump of claim 6, further comprising means for electrically connecting the first and second electrodes to an electric control instrument for generating the electrical potential.

8. The injector pump of claim 7, wherein the means for electrically connecting is an electronic circuit board with contacts for electrically connecting to the control instrument and electric conductors for electrically connecting the contacts with the first and second electrodes.

9. The injector pump of claim 8, wherein the first and second electrodes are part of a flexible electrode module.

10. The injector pump of claim 2, wherein the fluidic path contains a mobilizable reagent, which is mobilized and transported along the length of the micro-porous fluidic path by capillary flow when fluid is applied at the application end.

11. The injector pump of claim 10, wherein the mobilizable reagent is selected from the group of luminogenic, fluorogenic, electrogenic and chemoluminescent substrates and combinations thereof.

12. The injector pump of claim 1, wherein the receiving element is selected from the group of a micro-porous lateral flow path, a pipe, a micro-reactor, and a chamber.

13. The injector pump of claim 1, wherein the fluid receiving device includes a first fluid receiving element containing a dry reagent to be mobilized when the receiving device receives fluid from the injector pump, and a second fluid receiving element fluidically

connected to the first fluid receiving element for receiving the injected fluid containing the mobilized reagent.

14. The injector pump of claim 6, wherein the first electrode is spaced from the effluent end to generate a field free region in the fluidic path at the effluent end during electro-osmotic pumping.

15. The injector pump of claim 14, wherein the micro-porous fluidic path contains a mobilizable reagent located in the field free region and mobilized and transported towards the effluent end by capillary flow when fluid is applied at the application end.

16. The injector pump of claim 15, wherein the mobilizable reagent is selected from the group of luminogenic, fluorogenic, electrogenic and chemoluminescent substrates and combinations thereof.

17. The injector pump of claim 2, wherein the fluid introduced into the initially dry fluidic path at its application end is supplied to the application end from an integral fluid reservoir.

18. The injector pump of claim 17, wherein the integral reservoir is initially sealed, and after rupture of the seal releases fluid to the application end of the fluidic path.

19. The injector pump of claim 2, wherein the micro-porous fluidic path has pores less than 1 micrometers radius.

20. The injector pump of claim 2, wherein the micro-porous fluidic path has pores less than 0.2 micrometers radius.

21. The injector pump of claim 1, wherein the electro-osmotically pumped fluid has an electrolyte concentration of less than 10 milimolar

22. The injector pump of claim 1, wherein the fluidic path is trapezoidal shaped with its fluid application end wider than its effluent end.

23. The injector pump of claim 1, wherein the flow conductance of the fluid-filled fluidic path is at least 20 times less than the flow conductance of the fluid receiving device at its receiving location.

24. The injector pump of claim 1, for supplying liquid to a vented air chamber at the fluid receiving location.

25. The injector pump of claim 1, for supplying liquid to an enclosed air chamber at the fluid receiving location.

26. The injector pump of claim 25, wherein the fluid receiving device is a micro-porous lateral flow strip with a fluid receiving location along its length.

27. The device of claim 26, wherein the lateral flow strip has a sample application end and an effluent end.

28. The injector pump of claim 5, for operation with an electric potential of less than 100 volts.

29. A micro-assay device comprising:
a micro-reactor;
a first fluidic element for introducing sample into the micro-reactor; and
an injector pump as defined in claim 1.

30. The micro-assay device of claim 29, wherein the first fluidic element for introducing sample into the micro-reactor is a micro-channeled, micro-porous element which is initially dry and contains a mobilizable reagent.

31. The micro-assay device of claim 30, wherein the mobilizable reagent is selected from the group of luminogenic, fluorogenic, electrogenic and chemoluminescent substrates and combinations thereof.

32. The micro-assay device of claim 29, wherein the effluent end of the fluidic path of the injector pump, the air gap and the first fluidic means for introducing sample into the micro-reactor are sealed in an enclosing chamber containing air and being sealed from ambient.

33. The micro-assay device of claim 29, wherein the effluent end of the fluidic path element of the injector pump, the air gap and the first fluidic means for introducing sample into the micro-reactor are sealed in an enclosed chamber containing air and being vented through an air vent channel.

34. The micro-assay device of claim 29, wherein the micro-reactor is located along the length of the first fluidic element.

35. The micro-assay device of claim 29, wherein the first fluidic means and the fluidic path element of the injector pump are micro-fabricated on a planar substrate.

36. The micro-assay device of claim 29, wherein the first fluidic means and the fluidic path element of the injector pump are formed from membrane sheets by die cutting.

37. A micro-assay device, comprising: 2
an electrically-insulated substrate;
at least one micro-reactor;
a network of N input flow paths for supplying fluids to the micro-reactor;
a network of M effluent flow paths for removing fluids from the microreactor and wherein at least one of the N, M flow paths is an injector pump as defined in claim 1.

38. The micro-assay device of claim 37, wherein fluid introduced into the initially dry fluidic path at its application end is supplied to the application end from an integral fluid reservoir.

39. The micro-assay device of claim 38, wherein the integral reservoir is initially sealed, and after rupture of the seal releases fluid to the application end of the fluidic path.

40. The micro-assay device of claim 37, wherein effluent end of the injector pump, the isolator and the fluid receiving location of the micro-reactor are enclosed in a vented air chamber.

41. The micro-assay device of claim 37, wherein the effluent end of the injector pump, the isolator and the fluid receiving location of the micro-reactor are enclosed in a sealed air chamber.

42. The micro-assay device of claim 37, wherein the fluid receiving device is a micro-porous lateral flow strip with a fluid receiving location along its length.

43. The micro-assay device of claim 42, wherein the lateral flow strip has a sample application end and an effluent end.

44. The micro-assay device of claim 37, wherein one or more of the N, M flow paths is initially dry and contains a mobilizable reagent.

45. The micro-assay device of claim 44, wherein the mobilizable reagent is selected from the group of luminogenic, fluorogenic, electrogenic and chemoluminescent substrates and combinations thereof.

46. The micro-assay device of claim 37, wherein one or more of the micro-reactors is a channel which is fluidically connected to a region of the first fluidic means or to a region of the fluidic path of the injector pump.

47. The micro-assay device of claim 37, wherein one or more of the micro-reactors is located along the length of the N input paths.

48. The micro-assay device of claim 37, wherein one or more of the micro-reactors is located along the length of the M input paths.

49. The micro-assay device of claim 37, wherein one or more of the M effluentflow paths is a micro-porous element which is initially dry and contains mobilizable reagents.

50. The micro-assay device of claim 37, wherein one or more of the N input flow paths is a micro-porous element which is initially dry and contains mobilizable reagents.

51. The micro-assay device of claim 37, wherein one or more of the N, M flow paths is capillary-dimensioned and is produced by micro-fabrication on the planar substrate.

52. A diagnostic device with integral fluidics, comprising:
at least one lateral flow element having a first end for sample fluid application and a second, effluent end;
at least one micro-reactor along a length of the lateral flow element for performing a chemical reaction, and an injector pump as defined in claim 1 for selectively supplying fluid to the micro-reactor.

53. The diagnostic device of claim 52, wherein at least one lateral flow element is an initially dry micro-porous element with mobilizable chemical reagents.

54. The diagnostic device of claim 53, wherein the mobilizable reagent is a labelled conjugate.

55. The diagnostic device of claim 52, wherein the effluent end of the fluidic path element of the injector pump, the air gap, and the fluid receiving location of the lateral flow element are sealed in an enclosing chamber containing air.

56. A diagnostic device with integral fluidics for detecting an analyte in a sample fluid, comprising:

an electrically insulated substrate;

a micro-reactor on the substrate;

at least one lateral flow element for supplying to the micro-reactor a reporter-conjugate for forming an analyte-conjugate complex;

a fluidic element for supplying sample to the micro-reactor, and

an injector pump as defined in claim 1 for supplying reagent to a fluid receiving location of the micro-reactor.

57. The diagnostic device of claim 56, further comprising means for detecting analyte-conjugate complex formation.

58. An integral diagnostic device for testing the concentration of an analyte in a sample fluid, comprising

a micro-reactor for capturing an analyte-conjugate complex;

a substrate with a primary lateral flow element for transport of analyte in a sample fluid to the micro-reactor; and

at least one supplemental flow path for supplying a reagent to the micro-reactor, the supplemental flow path being an injector pump as defined in claim 1.

59. A diagnostic device, comprising

a card body

an initially dry, micro-porous fluidic path mounted in the card body with a fluid application end and an effluent end;

a sealed fluid reservoir also mounted on the card body

a valve for selectively opening the sealed fluid reservoir for releasing stored fluid from the reservoir; and

a conduit for supplying the fluid released by the fluid chamber to the application end of the micro-porous fluidic path.

60. A diagnostic device, comprising 5

a lateral flow strip including a sample application end and an effluent end and at least one fluid receiving location along its length for receiving fluid from an instrument controlled fluid injector; and an enclosed air chamber at the fluid receiving location.

61. A micro-fluidic device with at least one electroosmotic pump, comprising a fluidic path whose surface has a zeta potential, electrically connected to a pair of spaced apart electrodes at two spaced apart electrode locations, wherein the spaced apart electrodes are formed on one side of an insulating substrate and are electrically connected through the substrate to two spaced apart contact locations formed on the other side of the insulating substrate for connection to an external instrument means for generating an electrical potential across the electrodes. 6

62. The device of claim 61, wherein the insulating substrate is a flexible foil.

63. An injector pump for delivering fluid to a fluid receiving location of a fluid receiving device, comprising: 7

an initially dry fluidic path made of a micro-porous material having a fluid application end for accepting fluid and an effluent end for delivering fluid to the receiving location, the fluidic path automatically filling with fluid up to the effluent end by capillary action upon fluid application to the application end;

driving means for electro-osmotically pumping fluid out of the effluent end of the fluidic path element and across the isolator to the fluid receiving location; and

a sealing element for sealing the fluidic path along a perimeter thereof to prevent fluid flow from the fluidic path at the perimeter during electro-osmotic pumping.

64. The injector pump of claim 63, further comprising an isolator for fluidically isolating the effluent end from the receiving location to prevent passive fluid flow from the effluent end when the fluidic path includes a fluid.

65. The injector pump of claim 64, wherein the isolator is an air gap adjacent the effluent end.

66. The injector pump of claim 63, wherein the fluidic path is made of a material having a surface charge and zeta potential.

67. The injector pump of claim 63, wherein the driving means is a pair of spaced apart first and second electrodes for applying an electrical potential to a fluid in the fluidic path.

68. The injector pump of claim 67, wherein the first electrode is in electric contact with the fluid in the fluidic path at a first location and the second electrode is positioned at a second, spaced apart location for electrical contact with the fluid at the application end.

69. The injector pump of claim 68, wherein the first electrode is spaced from the effluent end to generate a field free region in the fluidic path at the effluent end during electro-osmotic pumping.

70. The injector pump of claim 63, wherein the fluidic path contains a mobilizable reagent, which is mobilized and transported along the length of the micro-porous fluidic path by capillary flow when fluid is applied at the application end.

71. The injector pump of claim 70, wherein the mobilizable reagent is selected from the group of luminogenic, fluorogenic, electrogenic and chemoluminescent substrates and combinations thereof.

72. The injector pump of claim 63, wherein the receiving element is selected from the group of a micro-porous lateral flow path, a pipe, a micro-reactor, and a chamber.

73. The injector pump of claim 63, wherein the fluid receiving device includes a first fluid receiving element containing a dry reagent to be mobilized when the receiving device receives fluid from the injector pump, and a second fluid receiving element fluidically connected to the first fluid receiving element for receiving the injected fluid containing the mobilized reagent.

74. The injector pump of claim 63, wherein the fluid introduced into the initially dry fluidic path at its application end is supplied to the application end from an integral fluid reservoir.

75. The injector pump of claim 63, wherein the micro-porous fluidic path has pores of less than 1 micrometers radius.

76. The injector pump of claim 75, wherein the micro-porous fluidic path has pores of less than 0.2 micrometers radius.

77. The injector pump of claim 63, wherein the flow conductance of the fluid-filled fluidic path is at least 20 times less than the flow conductance of the fluid receiving device at its receiving location.

78. The injector pump of claim 63, for supplying liquid to a vented air chamber at the fluid receiving location.

79. The injector pump of claim 63, for supplying liquid to an enclosed air chamber at the fluid receiving location.

80. The injector pump of claim 63, for operation with an electric potential of less than 100 volts.